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208 235-5600 Business

November 26, 2018

Arthur Burbank
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

Subject: Biological Selenium Removal Treatment Technology
Water Treatment Pilot Study
October 2018 Progress Report

Dear Art,

This progress report summarizes key activities in October 2018 associated with Phase 2 of the Water Treatment Pilot Study located near Hoopes Spring. This Pilot Study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring.

Work related to the approved Phase 2 Pilot Study continues at the site in accordance with the Final *Phase 2 Pilot Study Work Plan and Sampling and Analysis Plan, Ultra-Filtration/Reverse Osmosis and Biological Selenium Removal Fluidized Bed Bioreactor Treatment Technology* (Phase 2 WP/SAP).

Identification of Deliverables and Data Transmittals

There were no outstanding deliverables or transmittals for the month of October. At the time of this report, we have received laboratory data for Week 33 and 34. No data was collected for Week 32 due to the system being down for annual maintenance on the clarifier instead the data was collected during Week 33. Preliminary laboratory data are presented in Table 1. The field data for the Week 33 and 34 sampling event is summarized in Table 2.

Completed Activities

The following activities associated with the Phase 2 Pilot Study were completed in October 2018:

- Continued system operation and treatment of selenium.

The Treatment System Pilot (TSP) influent concentration for Week 33 and Week 34 were 152 ug/L and 142 ug/L respectively. The Treatment System Pilot effluent concentration for Week 33 and Week 34 were 20.5 ug/L and 21.1 ug/L. The removal efficiency ranged from 84% to 87 % for total selenium removal.

The average flow of the TSP was 1671 gpm for October, this includes approximately three days of downtime for annual maintenance. Since full scale operations began in early December 2017 approximately 810 million gallons of impacted water has been treated. The mass of

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selenium removed from December 2017 through October 2018 is approximately 822 pounds.

Upcoming Activities

The following activities associated with the Phase 2 Pilot Study are planned through November 2018:

- Continue system monitoring in accordance with the sampling and analysis plan.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

Jeffrey Hamilton
Environmental Engineer

cc:

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Table 1
Laboratory Results Full Analyte List

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Week 33			Week 34		
Station >>		Influent	Ultra Filtration Backwash	Effluent	Influent	Ultra Filtration Backwash	Effluent
Sample ID >>		SC1018-LSSHS-IN001	SC1018-LSSHS-UFB001	SC1018-LSSHS-EF001	SC1018-LSSHS-IN002	SC1018-LSSHS-UFB002	SC1018-LSSHS-EF002
Date >>		10/3/2018			10/10/2018		
Analyte	**Units**						
General Chemistry							
Ammonia, as N	mg/L	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Biochemical Oxygen Demand	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
TSS	mg/L	2 U	2 U	2 U	2 U	2 J	2 J
Nutrients							
Nitrate, as N	mg/L	0.36	0.16	0.52	0.36	0.15	0.48
Sulfide	mg/L	1 U	1 U	1 U	1 U	1 U	1 U
Phosphorus, Total	mg/L	0.0293	0.0358	0.249	0.0185	0.00538 J	0.155
Metals and Metalloids							
Selenium, Dissolved	mg/L	0.142	0.0436	0.022	0.135	0.0217	0.0205
Selenium, Total	mg/L	0.152	0.0466	0.0226	0.152	0.0221	0.0211

Notes:

Results presented are preliminary, and have not been validated at the time of this report.

U - Analyte not detected above the method detection limit (MDL).

J - Result is estimated.

Table 2 Field Water Quality Data

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Parameter >>	Dissolved Oxygen	ORP	pH	SC	Temperature	Turbidity
		Units >>	mg/L	mV	SU	umhos/cm	C	NTU
Station	**Sample ID**	**Date**						
Week 33								
Influent	SC1018-LSSHS-IN001	10/3/2018	7.47	132	7.51	494	13.8	1.1
Ultra Filtration Backwash	SC1018-LSSHS-UFB001	10/3/2018	7.61	136	7.21	197	13.15	3.1
Effluent	SC1018-LSSHS-EF001	10/3/2018	7.17	131	7.41	498	13.07	1.5
Week 34								
Influent	SC1018-LSSHS-IN002	10/10/2018	10.57	33	7.66	499	13.24	3.1
Ultra Filtration Backwash	SC1018-LSSHS-UFB002	10/10/2018	6.83	35	7.55	87	13.1	6.6
Effluent	SC1018-LSSHS-EF002	10/10/2018	7.05	42	7.59	487	13.12	3.8